Technology Transfer In Malaysian High Technology Industry

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ABSTRACT

Technology transfer is vital to contribute to Malaysian economic development and firm's productivity. As such, this study is aimed to investigate the practice of technology transfer among 12 major Malaysian high-tech industries in order to develop an overview about the technology transfer, which has been implemented among Malaysian high-tech industries. The technology transfer practices encompassed (1) 5 classifications of technology transfer-advocated by Khalil (2000), (2) 8 channels of technology flow advocated by Khalil (2000), (3) the Malaysia model in technology transfer for the beneficial of national technological development. A detailed survey instrument was administered to 12 major Malaysian high-tech industries to collect the required data. The results of this investigation indicated that the rate of technology transfer was high as these firms under each industry were found to be performing outstandingly.

Keywords:

Technology Transfer, Malaysian High Technology Industries.

1.0 INTRODUCTION

Technology has often been regarded as an important mechanism for increasing productivity, which extensively applied in the production, commercialization and distribution of goods and services. As such, Malaysia perceives technology under development as one of the most serious constraints in its efforts to advance the level of economic development. Lim (2000) affirmed that, as Malaysia recognizes that time and costs do not allow it the opportunity to develop and generate all the technology; therefore, Malaysia has opted for imports of technology or namely technology transfer as a less expensive and speedy means of accelerating the use of science and technology.

Khalil (2000) consented that, efficient and effective technology transfer requires the formulation of a strategy and the creation of mechanisms of transfer. These mechanisms can be technology transfer centers, information exchange networks, or organized projects that utilize special teams to affect the transfer. As technology naturally and continuously flows across boundaries of countries, regions, companies among departments within organizations and among individuals; the transferring of technology from one entity to another is affected through channels of technology flow. These may be general channels of contact among individuals and institutions or organized programs designed for the orderly and systematic transfer of technology.

2.0 LITERATURE REVIEW

2.1 Definitions of Technology Transfer

Jain and Triandis (1990) defined technology transfer as a process by which science and technology are transferred from one individual or group to another that incorporates this new knowledge into its way of doing things. In addition, Hamilton and Singh (1992) defined technology transfer as the process of movement or transfer of information, technical know-how, and people among corporate technical functions such as R&D, engineering, manufacturing and non-technical functions such as marketing and sales in order to yield innovative products and services that meet corporate business goals and fulfill customer needs. Finally, Khalil (2000) defined technology transfer as a process that permits the flow of technology from a source to receiver. The source in this case is the owner of the knowledge. It can be individual, company, or a country. On the other hand, the recipient is the beneficiary of such knowledge. The source can be an individual, a company or a country.

2.2 Classification of Technology Transfer

Khalil (2000) divided technology transfer into five categories and has defined each category respectively:

1. *International Technology Transfer*
Technology is transferred across national boundaries.
2. *Regional Technology Transfer*
Technology is transferred from one region of the country to another.
3. *Cross-industry or Cross Sector Technology Transfer*
Technology is transferred from one industrial sector to another.
4. *Inter-firm Technology Transfer*
Technology is transferred from one firm to another.
5. *Intra firm Technology Transfer*

Technology is transferred within a firm, from one location to another, from one department to another within the same facility.

2.3 Channels of Technology Flow

Technology is intangible. It flows easily across boundaries of countries, industries, departments, or individuals, provided that the channels of flow are established. According to Lim (2000), technology transfer may take the form of joint venture, technical assistance, know-how agreements, licensing, patent and trademark agreements, sales commission agreements, or tumkey contracts. However, in the same context, Khalil (2000) has categorized three types of technology flow channels systematically and comprehensively. Therefore in strengthening the collective of literature review, Khalil (2000)'s three types of technology flow channels are used by researcher in this study and have defined each channel thoroughly.

1. *General Channels*
The technology transfer is done unintentionally and may proceed without the continued involvement of the source. They include education, training, publication, conference, study mission and exchange of visits.

2. *Reverse Engineering Channels*
This is the process of taking something apart and analyzing its workings in detail, usually with the intention to construct a new device or program that does the same thing without actually copying anything from the original. Here a host or traditional receiver of a technology is capable of breaking the code of a technology and developing the capability to duplicate it in some fashion.

3. *Planned Channels*
The technology transfer is done intentionally, according to a planned process and with the consent of the technology owner. There are five types of agreements that are used to affect planned channels.
(a) *Licensing*
It is a form of strategic alliance which involves the sale of a right to use certain proprietary knowledge (intellectual property) in a defined way. Know-how for licensing purposes may include commercial and administrative knowledge as well as technical knowledge. The licensing agreement is the legal agreement setting out what is to be transferred from licensor to licensee and under what conditions.
(b) *Franchise*
It is a form of licensing while the source usually provides continual support to the receiver like supplying materials, marketing support or training.
(c) *Joint Venture*
It is a strategic alliance between two or more parties in combining their interest to undertake economic activity together. The parties agree to create a new entity together by both contributing equity, and they then share in the revenues, expenses, knowledge and resources to develop a technology, produce a product, or use their respective know-how to complement one another.
(d) *Turnkey project*
It involved an entity (country or organization), which buys a completed project from an outside source as the project is designed, implemented and delivered ready to operate. Special provisions for training or continued operational support may be included in the agreement between the parties.
(e) *Foreign direct investment* (FDI)
FDI is the movement of capital across national frontiers in a manner that grants the investor control over the acquired asset. Firms which source FDI are known as Multi National Corporations (MNCs). Usually this happens when the MNC decides to produce its products or invents some of its resources overseas. This permits the transfer of technology to another countries, but the technologies remains within the boundaries of the firms and is still controlled by the firm. This type of investment has advantages for both the investor and the host country. The investor gains access to a labor force, natural resources, technology or markets. The host country receives technological know-how, employment opportunities for its people, training for its workforce, and investment capital that adds to the development of its infrastructure.
(f) *Technical Consortium and joint R&D project*
Two or more entities collaborate in a large venture because the resources of one are inadequate to affect the direction of technological change. Typically this type of venture takes place between two countries or two conglomerates agree to combine their technological knowledge to create new innovative products.

3.0 RESEARCH METHODOLOGY

Research Design
This study focused into 12 major Malaysian high-tech industries to explore how these industries practicing technology transfer. The framework of technology transfer encompasses 5 categories of technology transfer and 8 channels of technology flow as advocated by Khalil (2000). Wikipedia (2005) defined "high-tech" as technology that is at the cutting edge-the most advanced currently available. As such, in the present study, high technology industry was defined as an industry which its nature of business dealing with high level technology, either it is a high technology in products manufacturer, services producer, or it owns high technology operations systems.

Research Objectives
(1) To assess categories of technology transfer, which applied by Malaysian 12 major high-tech industries.

(2) To assess channels of technology flow, which employed by Malaysian 12 major high-tech industries.

Questionnaire Design

The questionnaire contained 3 sections. Section I gathered the background information of the organization; Section II was used to obtain information pertaining to the 5 categories of technology transfer and 8 channels of technology flow that these industries have or still in implementation. Section III gathered the opinions and feedbacks based on technology transfer issues. Most of the questions required respondents to choose the best answer from the multiple choices alternatives. Only section III included open-ended questions to invite respondent to comment on the technology transfer issues and justifications in his or her organization.

Data Collection

By using a structured questionnaire, primary data were collected through personal interviews with the top management personals. The respondents were interviewed face to face and informed of their selection as part of the present study. Through the face-to-face interview, the participation of the respondents was requested and confirmed. Of the total number of 120 firms, 114 confirmed their participation and completed the questionnaire. This outcome resulted in the overall response rate of 95%.

Table 1: Respondent Background

Industry	Nature of Business
Chemical Engineering Industry	Concreting Chemicals
Pharmaceutical Engineering Industry	Herbal Medicine
Electronic Engineering Industry	Industrial Electronic
Electrical Engineering Industry	Independent Power Producers (IPP) who Generate Power for National Power Supplier
Agricultural Engineering Industry	Veterinary Medicine
Construction Engineering Industry	Construction Contracting
Mechanical Engineering Industry	Machineries Manufacturer
Polymer Engineering Industry	Plastics Products
Software Engineering Industry	IT Solutions
Petroleum Engineering Industry	Oil & Gas Technical Contractors for National Petroleum Company
Food Technology Industry	Confectionery
Communication Technology Industry	Technical contractors for few mobile operators

Source: Primary data from characteristics of the respondents

Characteristics of the Respondents

The characteristics of the respondents are from the high technology based industries. These industries are based in Malaysia, owned by Malaysian. The research has selected 10 respondents from each industry respectively. The criteria for the selection of respondents are as follows:

1. Malaysian owned company. Joint Venture is allowable with the Malaysian should holding at least 51% of the equity.
2. Nature of business dealing with "High-Technology".
3. Ranked as one of the top one hundred in the same industry using one of the following parameters:
   - Listed in Bursa Saham Malaysia in the first board or the second board.
   - Selected ten out of Top 100 companies in Malaysia as surveyed by "Malaysian Business" on 16, October year 2004. It represents ranking in terms of return on equity (RoE), turnover and profitability.
   - Best managed companies as surveyed by *"Far Eastern Economic Review" on 2, January 2004.*
4. Located in Malaysia's Multimedia Super Corridor parks, High Technology parks, Heavy Industry Parks along the west coast of Malaysia.

4.0 RESULT

A total of 114 questionnaire were collected from 120 targeted respondents significantly disclosed the return rate of 95%.

4.1 Classifications of Technology Transfer

Generally, the five types of technology transfer were implemented by twelve major industries in transferring technology.

Table 2: Classifications of Technology Transfer

Parameters	Percentage
International transfer	45.8
Regional transfer	18.3
Intra-firm transfer	15.7
Cross industry/cross sector	13.7
Inter-firm transfer	6.5
Total	100.0

Source: Primary Data

There are 45% of the respondents involved in international transfer and 18% that participated in ASEAN regional transfer.

4.2 Channels of Technology Transfer

The common technology transfer channels for these twelve major industries are:

Table 3: Channels of Technology Transfer

Parameters	Percentage
General channels	42.1
Joint Venture	23.1
Licensing	12.8

Reverse engineering	8.2
Turnkey project	6.2
Foreign Direct Investment	3.1
Technical Consortium & Joint R&D	3.1
Franchise	1.5
Total	100.0

Source: Primary Data

General channel with 42.1% recorded was the most popular method used in transferring technology while the least was franchise, with 1.5%.

5.0 DATA ANALYSIS AND DISCUSSION

5.1 Five Classifications of Technology Transfer

Malaysia as International Technology Recipient
The result reveals, 14% from 45% respondents have been or still acquiring contemporary advanced technologies from foreign countries. Generally, chemical, pharmaceutical, electronic, mechanical, petroleum, software and communication technology industry are still acquiring external technology to strengthen the technology owned. According to Malaysian Industrial Development Authority-MIDA (2004), since 1957 until 2004, 19 major countries had been accumulated, and they are continuously playing a vital role as international and regional technology transferor in transferring their technologies to Malaysia and provide the initial base for local industrial development.

Malaysia as International Technology Transferor
The result discloses 31% from 45% have been or still playing a role as international technology transferor in transferring their technologies to the other countries. Generally, transferor industries are agriculture, food technology, electrical engineering and construction industry. As trading has established a proper channel to disseminate technologies, Malaysian industries are progressively participated in exporting the produced goods to all over the world.

Regional Transfer
There is 15% from 18% respondents, which have been or and still playing a progressive role as technology transferor in transferring their technologies to ASEAN region. These industries include agriculture, food technology, electrical engineering and construction engineering industry. However, the remaining of 3% for electronic engineering and software engineering are still obtaining technologies from other ASEAN countries, particularly Singapore.

Intra Firm Transfer
The business expansion of Malaysian high-tech industries enable them to set up more subsidiaries in all over the world which rendered 16% from all industries used intra-firm transfer methodology. Majority, petroleum engineering and construction industry are practicing this method widely. Since the HQ is located in Malaysia, whilst their subsidiaries or projects are located in other location; therefore the technologies is transferred from HQ in Malaysia to their subsidiaries.

Cross Industry or Cross Sector Transfer
From this study, 14% from all industries had been or still applying cross industry technology transfer. Chemical engineering industry that formulated concreting chemicals for construction usage and mechanical engineering industry that manufactured machineries adapted product (plastics as subcomponents and spare parts in machineries) from polymer engineering. Besides, the software engineering industry that programming applications are broadly used in fundamental business operations.

Inter Firm Transfer
Only 7% from all industries had been or still deploying inter-firm transfer. Local agricultural engineering industry stands among the highest in implementing inter firm transfer, as the technologies transferors are government research centers or public universities. Currently, governmental policies are emphasizing to set-up proper channels to tie up the close collaboration between universities and research centers with industries. These efforts are stressed continuously as they are essential in order to ensure the match of R&D suit-well with industrial needs and requirements for the mutual benefits between two parties.

5.2 Channels of Technology Transfer

General Channels
Majority of the respondents, 42.1% from all industries are favor in implementing general channels for technology transfer. Educational training and on job training are the highest methods widely applicable in knowledge transfer. Practicality, this channel is the most effective in time saving, effective outcomes and can be a continuous activity to be conducted frequently.

Joint Venture
About 23.1% from all industries practiced joint venture and this method was highly applicable in petroleum, construction and mechanical industry.

Licensing
About 12.8% from all industries applied licensing and it is widely applied in pharmaceutical and chemical industry to purchase the right in utilizing the owner's technologies.

Reverse Engineering
About 8.2% from all industries had deployed reverse engineering channels. This method was highly practiced by electronic industry and chemical industry as an advance method to break the code of electronic

embedded components and chemical composition to develop the capability to duplicate it in some way.

Turnkey Project
About 6.2% from all industries employed turnkey project. This is widely practiced by construction, communication and electrical industry as a way to buy the completed project from outside source and operate the project directly.

Technical Consortium and Joint R&D
About 3.1% from all industries instigated technical consortium with joint R&D to transfer the acquired technology. This method was favored by software and polymer industry where the combination between two or more entities collaborated in large venture as to each of them is inadequate in resources to generate a complex and expensive R&D.

Foreign Direct Investment
About 3.1% from all industries have been and still engaging with foreign direct investment (FDI) as a distinctive technology transfer channel. Electronic industry is the highest among other industries in employing FDI. Source from MIDA (2005) signify that in 2004, a total of 1,101 manufacturing projects, with a total capital investment of US$7.6 billion were approved. Foreign investments amounted to US$3.5 billion in 583 projects, accounting for 46.1% of total approved investments. In addition, source from MIDA (2005), MNCs from more than 40 countries have invested in over 3,000 projects in Malaysia's manufacturing sector, attracted by the conducive business environment which has made the country one of the world's top locations for offshore manufacturing operations.

Franchise
Minority of all industries, which is 1.5% have been and still using franchising in technology transfer. This was commonly used by food industry in order to purchase technology to get continual technological support from transferor. Source from Malaysia External Trade Development-MATRADE (2005), over the past few years, the franchising industry, valued at more than US$2.8 billion, has grown at 10 per cent annually.

5.3 The Malaysia Model

Malaysia approach to technological development and technology transfer is a success model. Malaysia through its Ministry of International Trade and Industry (MITI) has played various roles in nurturing Malaysian industrialization, particularly in three vital functions:

(a) Fostering alliances between industries-governments in industrialization projects.
(b) Strategizing specific technology transfer plans that tie with national interest and scope.
(c) Formulating specific regulations and established monitoring mechanism on the process of technology transfer.

Inevitably, MITI has been in technology transfer operation for several years and even until today, its mission in fostering technology transfer is still continuing. In this study, two out of three main functions as mentioned above are thoroughly emphasized. Although the formulation of regulations is important, it has been excluded from this study as it entails wide coverage of in-depth Malaysia industrial law, enactment, regulations which can be considered as another perspective of study in the technology transfer context.

With two focused functions, therefore it is possible to make a preliminary assessment of the Malaysian experience for the transfer of technology framework. Such assessment could be particularly useful for some other developing countries which have not yet implemented any specific strategy to deal with technology transfer and might wish to learn from the experiences of Malaysia in this field. At the same time, those countries, which have taken the first steps in establishing transfer of technology transactions might profit from the comparison and use such assessment to improve the effectiveness of their framework.

5.3.1 Establishing the Core Strength for Conducive Business Environment

Firstly, Malaysian government is very supportive in establishing a harmonious business environment in welcoming the FDI. Figure 1 illustrates the Malaysian economic strength in 2005 to prove the vigorous of Malaysian economic. Figure 2 shows the criteria of the accommodating Malaysian government policies and Figure 3 demonstrate the criterion of the Malaysian proactive business environment. These efforts are vital and they reflected Malaysian government strength in creating the “first-choice” investing destination for both domestic cum foreign investors to decide their newly investment or reinvest in Malaysia.

Figure 1
Economics Strengths in year 2005

(a) Natural resources - oil, gas, tin, timber, palm oil and rubber.
(b) GDP growth – 5.8% in 1st Q 2005, 4.1% in 2nd Q 2005, 5.3 in 3rd Q 2005
(c) Gross National Saving-37.1% as percentage of GNP
(d) International reserves- US$80.4 billion (as at 15 August 2005)
(e) External Service Debt Ratio – 4.4% of gross export of goods and services.
(f) Unemployment rate - 3.5%.
(g) Inflation (CPI) – 2.5%.
(h) Reserves - 8.0 months of retained imports.

(i) Export manufactured goods - 78.5% of gross exports.
(j) Business Condition Index - 106.0 in 2nd Q 2005, 102.7 in 3rd Q2005
(k) Consumer Sentiments Index (CSI) - 109.8 in 2nd Q 2005, 102.5 in 3rd Q 2005

Source: Data as illustrated in Figure 1 is from http://www.mier.org.my/surveys, and http://www.mytrade.com.my (Last updated November 2005)

Figure 2
Supportive Government Policies

(a) Pro-business policies.
(b) Responsive government.
(c) Liberal investment policies.
(d) Attractive tax and other incentives.
(e) Liberal exchange control regime.
(f) Intellectual property protection.

Figure 3
A Vibrant Business Environment

(a) Market-oriented economy.
(b) Well-developed financial and banking sector, including the Labuan International Offshore Financial Centre.
(c) Wide use of English, especially in business.
(d) Legal and accounting practice based on the British system.
(e) Large local business community with long history in international business
(f) Large foreign business community in all business sectors.
(g) Extensive trade links - total trade accounts for 134% of GNP

Source: Data as illustrated in Figure 2 and 3 is from Bank Negara Malaysia Annual Report, 2004 and Department of Statistics, Malaysia. (Last updated on Tuesday, 27th September 2005)

5.3.2 Enhancing the Resources Competitiveness

Secondly, Malaysia as emerging high technology industrial country is equipped with a well-developed industrial infrastructure and proper established knowledge base workforce, which render it to become highly competitive in worlds market. Figure 4 illustrates criterion in some of the developed infrastructure, Figure 5 shows criteria for well-established facilities and Figure 6 demonstrates the criterion of Malaysian work force. These efforts signified that Malaysian resources are well established and properly set up. This is the second level to enhance Malaysia competitiveness in generating the strong influence to attract either domestic or foreign investors in firmly deciding their newly investment and continue their investment in Malaysia.

Figure 4
Developed Infrastructure

(a) Network of well-maintained highways and railways.
(b) Well-equipped seaports and airports.
(c) High quality telecommunications network and services.
(d) Fully developed industrial parks, including free industrial zones, technology parks and Multimedia Super Corridor.

Figure 5
Facilities

(a) Comprehensive system of vocational and industrial training.
(b) Financial assistance for training of workers.
(c) Well-developed financial and banking sector providing credit to industry.
(d) Export credit refinancing.
(e) Export credit insurance.
(f) Active and efficient stock exchange for raising capital.
(g) Fully developed industrial parks for industry
    - High-tech parks
    - Free zones for export industries
    - Multimedia Super Corridor (MSC)
(h) Ample electricity and water supply at reasonable costs.
(i) High quality telecommunications network and services.
(j) Well-equipped seaports and airports connected to the world.
(k) Network of well-maintained highways and railways

Figure 6
An Educated Malaysian Workforce

(a) Talented, young, educated and productive workforce.
(b) Multilingual workforce speaking two or three languages, including English.
(c) Comprehensive system of vocational and industrial training, including advanced skills training.
(d) Harmonious industrial relations with minimal trade disputes

Source: Data as illustrated in Figure 4, 5 and 6 is from Bank Negara Malaysia Annual Report, 2004 and Department of Statistics, Malaysia. Last updated on Thursday, 10th March and Tuesday, 27th September 2005.

5.3.3 Promoting Attractive Fiscal Policies

Thirdly, in some instance, both domestics and foreign industries could enjoy the support of government instituted fiscal and economic measures to remain competitiveness in the global arena. Figure 7 explains the characteristic of Malaysian government's fiscal policies and Figure 8 confirms some of the attractive incentives, which have been offered. This is the third level influential factor to reward the locally invested industries in compensating both domestic and foreign

investors in tiding their newly investment and continue their investment in Malaysia.

Figure 7
Fiscal Policies

(a) Local company incorporation
(b) Manufacturing license application
(c) No restriction on foreign equity ownership
(d) Liberal expatriate employment policy
(e) Free movement of funds for foreign investment in Malaysia
(f) Protection of intellectual property rights
(g) Company tax rate of 28%
(h) Individual tax rate from 0% -28%
(i) No minimum wages law
(j) Minimum conditions of employment under the Employment Act 1955
(k) Compulsory contributions:
- Employees Provident Fund
- Employment Injury Insurance Scheme and Invalidity Pension Scheme
- Human Resources Development Fund
(l) Investment guarantee agreements
(m) Double taxation agreements
(n) Responsible trade unions and harmonious industrial relations

Figure 8
Incentives

(a) Eligible industries or sectors
- Manufacturing
- Agriculture
- Tourism

(b) Manufacturing related services
- Integrated logistics services
- Integrated market support services
- Integrated central utility facilities

(c) Others, including
- Research and development
- Environmental management
- Training
- ICT
- Operational headquarters
- Regional distribution centers
- International procurement centers

(d) Main incentives
- Pioneer status
- Full income tax exemption
- Investment tax allowance
- Accelerated capital allowance
- Industrial building allowance
- Infrastructure allowance
- Reinvestment allowance
- Export incentives
- Import duty exemption on raw materials, components, machinery and equipment

Source: Data as illustrated in Figure 7 and 8 is from Bank Negara Malaysia Annual Report, 2004 and Department of Statistics, Malaysia. Last updated on Thursday, 10th March 2005.

5.4 Malaysia's Achievement

According to the World Competitiveness Report (2005) published by the International Institute for Management Development based in Switzerland, Malaysia is ranked:

(a) 10th most competitive nation among 30 countries, for countries with a population of more than 20 million;
(b) 6th position on international trade; and
(c) 8th position on economic performance.

Source from Business Times (2005), Malaysia is ranked:

(a) 24th most competitive among 117 nations worldwide after moved up seven rungs on the world competitiveness ladder from 2004.
(b) 25th on the Technology Index
(c) 2nd in terms of the Government's "priority and efforts in promoting ICT"
(d) 2nd, for its prudence and checks on government finances.

The source of Business Time (2005) is a significant recognition. The 2005 ranking is based on a combination of hard data, publicly available for each of the economies ranked, and the results of the Executive Opinion Survey. This year, nearly 11,000 business leaders worldwide were polled for the survey.

Malaysia, according to the Global Competitiveness Report (2005-2006), has seen a gradual improvement in recent years and "has broadly maintained its place in the area of technology". Among the "notable competitive advantages" listed in the for balance sheet for national competitiveness for Malaysia are the macroeconomic environment, public institutions, technology, sophistication of company operations, and strategy and quality of the national business environment. Under these criteria, factors such as government finances, national savings rate, inflation, recession expectations, foreign direct investment and technology transfer and various aspects of technology are considered.

6.0 CONCLUSION

Internationalization of technologies transfer is becoming a common phenomenon for Malaysia in attaining and retaining global competitiveness. At the same time, regional and sub-regional trade blocks are being formed accordingly, based on the same interest and the mutual benefits that can be gained through regional cooperation. Since 1990s, currently Malaysia is still playing an active role as technology transferor in exporting technologies directly and indirectly to other developing countries. Meanwhile, Malaysia is still occupying as a proactive technology recipient. As international and regional trade are not only support economics activities but also enhance the technology transfer, Malaysia has taken the advantage of these

trading platforms to strengthen its comparative advantages and reinforce its economics structure in promoting exports of high value added products or services and assimilating technologies among trading countries.

Malaysia is pushing hard to develop its technological base and to convert its knowledge into value added products and services. Malaysia as one of the Tigers of Southeast Asia has achieved a huge success as the successful technology transfer efforts successfully spurred the regional (both ASEAN and ASIA) economic growth. Along the way, Malaysia government built its strategy around becoming a regional business service cum manufacturing hub in the Southeast Asia Region. Malaysia serves as a regional marketing and technical support centre, a regional industrialized and business center, a regional headquarters for MNCs. The hard efforts of Malaysia government in sticking for higher technological ownership, have successfully established a strong technological and industrial capabilities in several areas. These capabilities could as well be of considerable relevance and utility to other developing countries. It also selected niche industries for specialization, including electrical and electronic products, refined petroleum products and Liquefied Natural Gas, palm oil, software engineering and ICT. In near future, Malaysia targeted to be an advanced food-processing hub in producing halal food.

Inevitably, Malaysia is rich with its own resources, lower wages and the availability of the highly educated knowledge work force. Besides Malaysia also possesses other advantages with its strategic location, the proper established world-class facilities. As a result, Malaysia have successfully attract vast FDI particularly from both western and eastern countries in fostering the advancement of local high technology industrialization, and cultivating the technology transfer between Malaysian and also the industrialized nations. However, there is still a need for continuous efforts in structuring Malaysian technological strength and industrial capabilities, showcasing and demonstration of Malaysian technology export capabilities and facilitation of technology transfer and trade at the global level towards the aim to be developed nations in year 2020.

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